

WHAT IS CLAIMED IS:

5 1. In a mobile satellite system including a satellite communication switching office having a satellite antenna for providing communication of a satellite message with a mobile communication system via a satellite, a central controller communicating with the mobile communication system via the satellite communication switching office, a communication method comprising:

10 storing a plurality of message display forms in the mobile communication system, each message display form having a predetermined display format and a form identifier;

generating at the central controller a user message comprising message data;

15 outputting from the central controller a satellite message carrying the message data and the form identifier of a selected one of the message display forms to the satellite communication switching office;

transmitting the satellite message to the mobile communication system via the satellite; and

20 displaying the satellite message received by the mobile communication system using a selected one of the stored message display forms corresponding to the form identifier in the transmitted satellite message.

2. The method of claim 1, wherein the storing step comprises:

generating a data message having the form identifier and the corresponding display format of at least one of the message display forms;

25 transmitting the data message as a second satellite message from the satellite communication switching office to the mobile communication system via the satellite; and

storing the received data message at the mobile communication system.

30 3. The method of claim 2, wherein the mobile communication system comprises a satellite transceiver, a communication layer software, and an application layer software having a network controller portion and a message form controller, the step of storing the received data message comprising:

35 receiving at the transceiver transmissions carrying the second satellite message from the satellite;

outputting from the satellite transceiver to the communication layer software the second satellite message as data packets;

assembling the second satellite message from the output data packets in the communication layer software;

outputting the second satellite message from the communication layer software to the network controller portion;

obtaining the form identifier and the corresponding display format from the transmitted data message; and

storing the form identifier and the corresponding display format in the message form controller.

4. The method of claim 3, wherein the application layer software further comprises a message log, the displaying step comprising:

receiving transmissions carrying the satellite message from the satellite and outputting the satellite message as data packets from the transceiver;

assembling the satellite message from the output data packets in the communication layer software; and

outputting the satellite message from the communication layer software to the network controller portion;

storing the message data and the form identifier in the message log; and

displaying a notification of the user message stored in the message log.

5. The method of claim 4, wherein the application layer software further comprises a display form controller, the displaying step further comprising:

accessing the message data and the form identifier stored in the message log in response to a user selection input;

retrieving the message display form corresponding to the accessed form identifier from the message form controller;

combining in the display form controller the retrieved message display form with the accessed message data to form a combined display data; and

outputting the combined display data for display.

6. The method of claim 1, wherein the mobile communication system comprises a satellite transceiver, a communication layer software, an application layer software, and a display, the displaying step comprising:

receiving transmissions carrying the satellite message from the satellite and outputting the satellite message as data packets;

assembling the satellite message from the output data packets in the communication layer software; and

combining the selected one of the stored message display forms with the message data in the application layer software to form a combined display data; and
outputting the combined display data to the display.

7. The method of claim 6, wherein the mobile communication system further comprises a paging device, the method further comprising outputting a paging signal from the paging device upon reception of the satellite message by the mobile communication system.

8. The method of claim 6, wherein the application layer software comprises a network controller, an event handler, a message log, and a user interface controller, the combining step comprising:

outputting a network event signal from the network controller to the event handler indicating receipt of the satellite message carrying the message data of the user message;

reading the message data from the network controller by the event handler in response to the network event signal;

outputting the message data from the event handler to the message log and at least a portion of message data to the user interface controller; and

generating a notification in the user interface controller for display in response to the received message data from the event handler.

9. The method of claim 8, wherein the event handler comprises a polling timer controller and a central event queue, the reading and outputting steps by the event handler each comprising:

counting a specified interval in the polling timer controller;

outputting a timer event signal from the polling timer controller after the specified interval; and

processing a next event from the central event queue in response to the timer event signal.

10. The method of claim 9, wherein the specified interval in the polling timer controller is determined in accordance with a processing capacity of the communication layer software.

5 11. The method of claim 1, wherein the mobile communication system comprises a satellite transceiver, a communication layer software, and an application layer software having a network controller portion, an event handler, and a network form controller, and a configuration manager, the method further comprising:

10 transmitting from the satellite communication switching office a second satellite message carrying a data message;

receiving from the satellite transmissions carrying the second satellite message and outputting the satellite message as data packets from the transceiver;

assembling the satellite message from the output data packets in the communication layer software;

15 outputting the second satellite message from the communication layer software to the network controller portion;

if the received data message includes one of the message display forms, outputting the one message display form from the network controller portion to the network form controller;

20 if the received data message includes configuration data, outputting a network event signal from the network controller to the event handler indicating receipt of the satellite message;

causing the event handler to retrieve the configuration data after a predetermined interval in response to the network event signal; and

25 supplying the configuration data from the event handler to the configuration handler.

12. The method of claim 11, wherein the application layer software further comprises a data communications equipment (DCE) controller, the method further comprising:

30 outputting DCE control signals from the DCE controller to the transceiver;

setting the transceiver to a time slot of the satellite transmissions in response to the DCE control signals;

receiving from the transceiver data packets carrying a device message;

35 assembling the device message from the received data packets in the communication layer software;

sending the device message from the network controller portion to the DCE controller, the device message carrying transceiver status information; and

outputting the transceiver status information from the DCE controller for display by the mobile communication system.

13. The method of claim 1, wherein the mobile communication system comprises a PCMCIA slot and application software including a configuration manager, the storing step comprising:

connecting a PCMCIA card to the PCMCIA slot; and

downloading the message display forms via the PCMCIA slot.

14. In a mobile satellite system including a satellite communication switching office having a satellite antenna for providing communication of satellite messages with a mobile communication system via a satellite, a central controller communicating with the mobile communication system via the satellite communication switching office, the mobile communication system comprising:

a satellite transceiver communicating data packets carrying a first satellite message to the satellite in response to transceiver control signals;

a graphic user interface providing a display and accepting key inputs from a user; and

a software system comprising:

(1) a middleware layer sending the transceiver control signals and packets carrying the satellite message to the transceiver,

(2) a network form controller storing a plurality of message forms each having a form identifier and a form definition specifying a predetermined format,

(3) an address list storing a list of station addresses identifiable by the satellite communication switching office for respective satellite stations having communication capabilities with the satellite communication switching office,

(4) a user interface controller retrieving a selected one of the form definitions and at least one station address in response to the key inputs, the user interface controller outputting a user message including the at least one station address, user inputs from the graphic user interface and the form identifier corresponding to the selected form definition,

(5) a network controller subsystem outputting the satellite message carrying the user message to the middleware layer, and

(6) an event handler controlling operations of the network controller and the user interface controller in response to network event and user event signals from the network controller and the user interface controller, respectively.

5 15. The mobile communication system of claim 14, wherein the event handler comprises:

 a polling timer controller outputting timer event signals at time intervals corresponding to the processing capacity of the middleware layer; and

 an event queue that stores each software event generated by the software system, the event handler processing each software event in the event queue in response to the corresponding timer event signal.

10 16. The mobile communication system of claim 15, wherein the user interface controller comprises:

15 an input monitor outputting keyboard data and data switch event signals in response to the user inputs;

 a display form controller generating a form display data in response to the selected form definitions, the form display data including the keyboard data;

20 an interface controller receiving transceiver status information from the event handler and passing the one station address to the display form controller for display in the form display data; and

 a graphics library generating the graphic user interface in response to the form display data, the transceiver status information and the keyboard data.

25 17. The mobile communication system of claim 16, wherein the user interface controller further comprises:

 a menu definition file storing menu display data and menu functions; and

 a menu controller outputting a selected one of the menu display data to the graphics library in response to the keyboard data.

30 18. The mobile communication system of claim 14, further comprising:

 a PCMCIA slot for receiving configuration data; and

 a random access memory storing the address list and the configuration data from the PCMCIA slot.

19. In a mobile satellite system including a satellite communication switching office having a satellite antenna for providing communication of a satellite message with mobile communication systems via a satellite, a central controller communicating with the mobile communication systems via the satellite communication switching office, a communication method comprising:

storing a plurality of message display forms in the mobile communication system, each message display form having a predetermined display format and a form identifier;

storing network identifiers for the central controller and at least one of the mobile communication systems;

generating at a first of the mobile communication systems a user message comprising message data and one of the stored network identifiers;

outputting from the first mobile communication system a satellite message carrying the one network identifier, the message data and the form identifier of a selected one of the message display forms to the satellite communication switching office;

transmitting the satellite message to the satellite communication switching office via the satellite; and

routing the satellite message from the satellite communication switching office to one of the central controller and a second of the mobile communication systems in accordance with the one network identifier.

20. The method of claim 19, wherein the storing of message display forms comprises downloading at least a portion of the message display forms from a PCMCIA card connected to the mobile communication switching office.

21. The method of claim 19, wherein the storing of message display forms comprises receiving satellite messages from the satellite communication switching office including the form identifier and corresponding predetermined display format for at least a corresponding one of the message display forms.

22. The method of claim 19, wherein the storing of network identifiers comprises receiving a satellite message from the satellite communication switching office including at least one of the network identifiers.

23. In a mobile satellite system including a satellite communication switching office having a satellite antenna for providing communication of satellite messages with

5 a mobile communication system via a satellite, a central controller communicating with the mobile communication system via the satellite communication switching office, the mobile communication system including a satellite transceiver communicating data carrying a first satellite message to the satellite in response to transceiver control signals, and a graphic user interface providing a display and accepting key inputs from a user, the mobile communication system storing on a tangible medium the following software structure for transmitting and receiving the data:

10 (1) a middleware communications layer sending the data including the satellite message to the transceiver, said middleware communications layer capable of supporting different low level communication codes to support different transceivers;

(2) a middleware router layer controlling operations of the network controller, said middleware router layer capable of supporting different transceiver protocols;

15 (3) a network controller layer outputting the satellite message carrying the user message to the middleware communications layer, said network controller layer capable of supporting different network functionality; and

20 (4) a user interface layer outputting a user message, and receiving user inputs from the graphic user interface, said user interface layer capable of supporting different screen designs and/or information that is displayed to or received from the user without requiring recompilation of the software structure.